Contents

NUMBER 108

ANTHONY L. MOORE, PETER R. RICH, and WALTER D. BONNER, JR: Factors Influencing the Components of the Total Protonmotive Force in Mung Bean Mitochondria 1

J. M. LORD: Evidence that a Proliferation of the Endoplasmic Reticulum Precedes the Formation of Glyoxysomes and Mitochondria in Germinating Castor Bean Endosperm 13

M. E. DELANEY, M. JONES, and L. J. ROGERS: Effect of 1,1,1-Trichloro-2,2-bis(*p*-chlorophenyl)ethane on Cytochromes of the Photosynthetic Electron Transport System 25

NIGEL P. HALL, ALFRED J. KEYS, and MICHAEL J. MERRETT: Ribulose-1,5-Diphosphate Carboxylase Protein during Flag Leaf Senescence 31

A. S. RAGHAVENDRA and V. S. R. DAS: $(Na^+–K^+)$-Stimulated ATPase in Leaves of C_4 Plants: Possible Involvement in Active Transport of C_4 Acids 39

J. P. DONAIRE and J. LÓPEZ-GORGÉ: Lipid Biosynthesis in Leaf and Fruit of Olive 49

SEAN COUGHLAN and LEONARD V. EVANS: Isolation and Characterization of Golgi Bodies from Vegetative Tissue of the Brown Alga *Fucus serratus* 55

IRITH MARBACH and ALFRED M. MAYER: Formation of Catechol Oxidase in Seed Coats of *Pisum elatius* during Seed Maturation 69

PETER I. PAYNE, MARTA DOBRZANSKA, PETER W. BARLOW, and MARGARET E. GORDON: The Synthesis of RNA in Imbibing Seed of Rape (*Brassica napus*) prior to the Onset of Germination: A Biochemical and Cytological Study 73

B. DELL and A. J. MCCOMB: Biosynthesis of Resin Terpenes in Leaves and Glandular Hairs of *Newcastella viscida* 89

G. GRUNWALDT, R. EHWALD, and H. GORING: Suitability of the Osmotic Shock Procedure for the Analysis of Membrane Transport in Root Tips of *Zea mays* L. 97

F. A. SMITH and N. A. WALKER: Entry of Methylammonium and Ammonium Ions into *Chara* Internodal Cells 107

F. A. SMITH, J. A. RAVEN, and H. D. JAYASURIYA: Uptake of Methylammonium Ions by *Hydrodictyon africanum* 121

D. J. F. BOWLING, ROBIN D. GRAHAM, and JAMES DUNLOP: The Relationship Between the Cell Electrical Potential Difference and Salt Uptake in the Roots of *Helianthus annuus* 135

K. RAMAN and R. I. GREYSON: Differential Effects of Kinetin on Acidic Ethyl Acetate-soluble and Highly Water-soluble Gibberellin Fractions in 'Single' and 'Double' *Nigella damascena* L. 141

D. A. MORRIS and A. G. THOMAS: A Microautoradiographic Study of Auxin Transport in the Stem of Intact Pea Seedlings (*Pisum sativum* L.) 147

AMNON EREZ: Thiourea, a Growth Promoter of Callus Tissues 159

R. C. PECKET and FAWZIA AL-CHARCHAFCHI: Dormancy in Light-sensitive Lettuce Seeds 167

W. J. DAVIES: Some Effects of Abscisic Acid and Water Stress on Stomata of *Vicia faba* L. 175

MICHAEL B. JACKSON, K. GALES, and D. JOAN CAMPBELL: Effect of Waterlogged Soil Conditions on the Production of Ethylene and on Water Relationships in Tomato Plants 183

S. SIVAKUMARAN and M. A. HALL: Effects of Age and Water Stress on Endogenous Levels of Plant Growth Regulators in *Euphorbia lathyrus* L. 195

H. J. NEWBURY, MARGARET SEDGLEY, and J. V. POSSINGHAM: Nucleic Acid Metabolism During Early Development of Pollinated and Auxin-induced Parthenocarpic Watermelon Fruits 207

M. HORNER and H. E. STREET: Problems encountered in the Culture of Isolated Pollen of a Burley Cultivar of *Nicotiana tabacum* 217

HERBERT MARTIN WILSON, GUNDA MIX, and BÄRBEL FOROUGHI-WEHR: Early Microspore Divisions and Subsequent Formation of Microspore Calluses at High Frequency in Anthers of *Hordeum vulgare* L. 227

L. K. PAREEK and N. CHANDRA: Differentiation of Shoot Buds *in vitro* in Tissue Cultures of *Sisymbrium irio* L. 239

G. RUSSELL and J. GRACE: The Effect of Wind on Grasses. IV. Some Influences of Drought or Wind on *Lolium perenne* 245

D. W. COWLING and D. R. LOCKYER: The Effect of SO_2 on *Lolium perenne* L. Grown at Different Levels of Sulphur and Nitrogen Nutrition 257

S. MORESHET and V. FALKENFLUG: A Krypton Diffusion Porometer for the Direct Field Measurement of Stomatal Resistance 267

HANNO RICHTER: Water Relations of Single Drying Leaves: Evaluation with a Dewpoint Hygrometer 277

G. T. HAGASETH: Kinetic and Thermodynamic Parameters that Describe Isothermal Seed Germination 281

A. J. E. VAN BEL: The Free Space of the Xylem Translocation Pathway of the Tomato Stem 295

BOOK REVIEW

H. GAUL: Barley Genetics III. *R. N. H. Whitehouse* 305

NUMBER 109

J. F. CARASCO, R. CROY, E. DERBYSHIRE, and D. BOULTER: The Isolation and Characterization of the Major Polypeptides of the Seed Globulin of Cowpea (*Vigna unguiculata* L. Walp) and their Sequential Synthesis in Developing Seeds 309

H. C. PASSAM and M. C. BIRD: The Respiratory Activity of Honeydew Melons During the Climacteric 325

KAARINA PIHAKASKI and SEPPO PIHAKASKI: Myrosinase in Brassicaceae (Cruciferae) II. Myrosinase Activity in Different Organs of *Sinapis alba* L. 335

JAMES L. CATALFAMO, JOSEPH H. FEINBERG, GEORGE W. SMITH, and HELEN BIRECKA: Effect of Gibberellic Acid and Ethylene on Peroxidase in Pea Internodes 347

J. W. PATRICK and P. F. WAREING: Auxin-Promoted Transport of Metabolites in Stems of *Phaseolus vulgaris* L. Effects Remote from the Site of Hormone Application 359

J. MARC and J. H. PALMER: Determination of the Length of the Vegetative and Pre-floral Stages in the Day-Neutral Plant *Helianthus annuus* by Chilling Pulses 367

J. MCDOUGALL and J. R. HILLMAN: Purification of IAA from Shoot Tissues of *Phaseolus vulgaris* and its Analysis by GC-MS 375

D. P. AIKMAN and D. C. WILDON: Phloem Transport: The Surface Flow Hypothesis 387

J. D. BRIERS: Speckle Fluctuations as a Screening Test in the Holographic Measurement of Plant Motion and Growth 395

JOHN S. PATE and DAVID F. HERRIDGE: Partitioning and Utilization of Net Photosynthate in a Nodulated Annual Legume 401

A. E. GALLACHER and J. I. SPRENT: The Effect of Different Water Regimes on Growth and Nodule Development of Greenhouse-Grown *Vicia faba* 413

L. R. BENJAMIN and M. J. WREN: Root Development and Source-Sink Relations in Carrot, *Daucus carota* L. 425

M. C. DREW and L. R. SAKER: Nutrient Supply and the Growth of the Seminal Root System in Barley. III. Compensatory Increases in Growth of Lateral Roots, and in Rates of Phosphate Uptake, in Response to a Localized Supply of Phosphate 435

C. R. CLEMENT, M. J. HOPPER, and L. H. P. JONES: The Uptake of Nitrate by *Lolium perenne* from Flowing Nutrient Solution. I. Effect of NO_3^- Concentration 453

JOHN ROBERTS: The Use of the 'Tree Cutting' Technique in the Study of the Water Relations of Norway Spruce, *Picea abies* (L) Karst. 465

CAROLINE G. SPYROPOULOS and MARIA MAVROMMATIS: Effect of Water Sress on Pigment Formation in *Quercus* Species 473

PEARL WEINBERGER, L. POMBER, and R. PRASAD: The Responses of White Spruce and Yellow Birch to Some Selected Organophosphorus Insecticides and the Adjuvants Atlox and Arotex 479

HAYA GELMOND, I. LURIA, L. W. WOODSTOCK, and M. PERL: The Effect of Accelerated Aging of Sorghum Seeds on Seedling Vigour 489

M. PERL, I. LURIA, and HAYA GELMOND: Biochemical Changes in Sorghum Seeds Affected by Accelerated Aging 497

D. J. KUBEK and M. L. SHULER: Electronic Measurement of Plant Cell Number and Size in Suspension Culture 511

S. J. WAINWRIGHT and H. W. WOOLHOUSE: Inhibition by Zinc of Cell Wall Acid Phosphatases from Roots in Zinc-Tolerant and Non-tolerant Clones of *Agrostis tenuis* Sibth. 525

BOOK REVIEWS

A. PRISON and M. H. ZIMMERMANN: Encyclopedia of Plant Physiology, New Series. Volume 3. Transport in Plants III. *A. J. Keys* 533

J. F. SUTCLIFFE and J. S. PATE: The Physiology of the Garden Pea. *R. C. Hardwick* 534

C. O. CARTER: Human Heredity. *Lindon Eaves* 536

NUMBER 110

K. WINTER and H. GREENWAY: Phosphoenolypyruvate Carboxylase from *Mesembryanthemum crystallinum*; Its Isolation and Inactivation *in vitro* 539

H. GREENWAY, K. WINTER, and U. LÜTTGE: Phosphoenolpyruvate Carboxylase During Development of Crassulacean Acid Metabolism and During a Diurnal Cycle in *Mesembryanthemum crystallinum* 547

G. C. HARRIS and A. I. STERN: Stoichiometry of the Ribulose-1,5-Bisphosphate Oxygenase Reaction 561

S. P. LONG and H. W. WOOLHOUSE: The Responses of Net Photosynthesis to Vapour Pressure Deficit and CO_2 Concentration in *Spartina townsendii* (*sensu lato*), a C_4 Species from a Cool Temperate Climate 567

D. W. LAWLOR and H. FOCK: Photosynthesis, Respiration, and Carbon Assimilation in Water-Stressed Maize at Two Oxygen Concentrations 579

JAMES A. BUNCE: Effects of Shoot Environment on Apparent Root Resistance to Water Flow in Whole Soybean and Cotton Plants 595

R. A. CHRIST: The Elongation Rate of Wheat Leaves. I 603

R. A. CHRIST: The Elongation Rate of Wheat Leaves. II 611

GEORGINA N. HUTHER, EUNICE I. LORD, and BRIAN C. LOUGHMAN: The Metabolic Fate of Phenoxyacetic Acids in Higher Plants 619

GERALD PERBAL: The Mechanism of Geoperception in Lentil Roots 631

O. M. VAN ANDEL and D. R. VERKERKE: Stimulation and Inhibition by Ethephon of Stem and Leaf Growth of Some Gramineae at Different Stages of Development 639

H. Y. MOHAN RAM and USHA MEHTA: Origin and Development of Secondary Capitula in *Calendula officinalis* L. in Response to Gibberellic Acid 653

FOUAD M. BASIOUNY, W. HALLER, and L. A. GARRARD: The Influence of Growth Regulators on Sprouting of Hydrilla Tubers and Turions 663

Y. Y. LESHEM and M. INBAR: Resistance to Gibberellin-Induced Changes of Lipid Fluidity in Wheat Embryo Mitochondrial Membranes as Assessed by the Fluorescent Probe 1,6-Diphenyl-1,3,5-hexatriene 671

P. R. SHEWRY, J. M. HILL, H. M. PRATT, M. M. LEGGATT, and B. J. MIFLIN: An Evaluation of Techniques for the Extraction of Hordein and Glutelin from Barley Seed and a Comparison of the Protein Composition of Bomi and Risø 1508 677

R. B. LEE: Inorganic Nitrogen Metabolism in Barley Roots Under Poorly Aerated Conditions 693

A. C. BORSTLAP: Glycine and L-Alanine as Antagonists of Growth Inhibition by the Branched-Chain Amino Acids in *Spirodela polyrhiza* 709

S. TRACHTENBERG and E. ZAMSKI: Conduction of Ionic Solutes and Assimilates in the Leptom of *Polytrichum juniperinum* Willd 719

R. STELZER, A. LAUCHLI, and D. KRAMER: An Improved Precipitation Technique for Intracellular Cl^- Localization in Plant Tissues by Use of Picric Acid 729

L. G. BRIARTY: The Development of Root Nodule Xylem Transfer Cells in *Trifolium repens* 735

MURIEL R. CHANDLER: Some Observations on Infection of *Arachis hypogaea* L. by *Rhizobium* 749

W. C. MUELLER and A. D. GREENWOOD: The Ultrastructure of Phenolic-Storing Cells Fixed with Caffeine 757

CHANAN ITAI and HANS MEIDNER: Functional Epidermal Cells are Necessary for Abscisic Acid Effects on Guard Cells 765

MARY EDWARDS and HANS MEIDNER: Stomatal Responses to Humidity and Water Potentials of Epidermal and Mesophyll Tissue 771

RAINER LÖSCH and BIRGIT SCHENK: Humidity Responses of Stomata and the Potassium Content of Guard Cells 781

ROBERT T. HEINEMAN and PETER R. ATSATT: Nutritional Studies of Hemiparasitic *Orthocarpus* (Scrophulariaceae) 789

BOOK REVIEWS

P. E. PILET: Plant Growth Regulation. *M. C. Elliott* 797

D. H. JENNINGS: Integration of Activity in the Higher Plant. *H. W. Woolhouse* 798

D. DE NETTANCOURT: Incompatibility in Angiosperms. *H. L. K. Whitehouse* 799

JULIA F. MORTON: Major Medicinal Plants. *C. P. Whittingham* 801

A. TREBST and M. AVRON: Photosynthesis I. Photosynthetic Electron Transport and Photophosphorylation. *C. P. Whittingham* 801

NUMBER 111

S. P. LONG and H. W. WOOLHOUSE: The Responses of Net Photosynthesis to Light and Temperature in *Spartina townsendii* (*sensu lato*), a C_4 Species from a Cool Temperate Climate 803

B. ACOCK, D. A. CHARLES-EDWARDS, D. J. FITTER, D. W. HAND, L. J. LUDWIG, J. WARREN WILSON, and A. C. WITHERS: The Contribution of Leaves from Different Levels within a Tomato Crop to Canopy Net Photosynthesis: An Experimental Examination of Two Canopy Models 815

D. J. MARES, J. S. HAWKER, and J. V. POSSINGHAM: Starch Synthesizing Enzymes in Chloroplasts of Developing Leaves of Spinach (*Spinacea oleracea* L.) 829

GRAHAM WILSON and PHILIP MARRON: Growth and Anthraquinone Biosynthesis by *Galium mollugo* L. Cells in Batch and Chemostat Culture 837

J. A. RAVEN and F. A. SMITH: Effect of Temperature and External pH on the Cytoplasmic pH of *Chara corallina* 853

C. G. GREENHAM, KATIE HELMS and W. J. MÜLLER: Influence of Virus Infections on Impedance Parameters 867

A. BENZIONI and M. TAL: Ion Imbalance in *Capsicum annum scarbrous diminutive*, a Wilty Mutant of Pepper. II 879

P. J. WOODHOUSE, A WILD, and C. R. CLEMENT: Rate of Uptake of Potassium by Three Crop Species in Relation to Growth 885

J. CLEMENS and P. G. JONES: Modification of Drought Resistance by Water Stress Conditioning in *Acacia* and *Eucalyptus* 895

JOAN E. KROCHKO, J. DEREK BEWLEY, and JOHN PACEY: The Effects of Rapid and Very Slow Speeds of Drying on the Ultrastructure and Metabolism of the Desiccation-Sensitive Moss *Cratoneuron filicinum* (Hedw.) Spruce 905

MARGARET RADLEY: Factors Affecting Grain Enlargement in Wheat 919

I. E. HENSON: Types, Formation and Metabolism of Cytokinins in Leaves of *Alnus glutinosa* (L.) Gaertn. 935

J. A. PRYKE and G. BERNIER: RNA Synthesis in the Apex of *Sinapis Alba* in Transition to Flowering 953

LJ. RADOJEVIC and A. KOVOOR: Characterization and Estimation of Newly Synthesized DNA in Higher Plant Protoplasts During the Initial Period of Culture 963

J. L. FIELDING and J. H. HALL: A Biochemical and Cytochemical Study of Peroxidase Activity in Roots of *Pisum sativum*. I 969

J. L. FIELDING and J. L. HALL: A Biochemical and Cytochemical Study of Peroxidase Activity in Roots of *Pisum sativum*. II 983

WILLIAM F. PICKARD, PETER E. H. MINCHIN, and JOHN H. TROUGHTON: Real Time Studies of Carbon-11 Translocation in Moonflower. I 993

WILLIAM F. PICKARD, PETER E. H. MINCHIN, and JOHN H. TROUGHTON: Real Time Studies of Carbon-11 Translocation in Moonflower. II 1003

ALAN S. PAAU, JAMES ORO, and JOE R. COWLES: Application of Flow Microfluorometry to the Study of Algal Cells and Isolated Chloroplasts 1011

BOOK REVIEWS

H. WAGNER and P. WOLFF: New Natural Products and Plant Drugs with Pharmacological, Biological and Therapeutic Activity. *J. D. Phillipson* 1021

R. D. PRESTON and H. W. WOOLHOUSE: Advances in Botanical Research, Volume 4. *E. W. Simon* 1022

H. W. WOOLHOUSE: Advances in Botanical Research, Volume 5. *E. W. Simon* 1022

H. SMITH: Regulation of Enzyme Synthesis and Activity in Higher Plants. *T. Ap Rees* 1024

KENNETH V. THIMANN: Hormone Action in the Whole Life of Plants. *L. J. Audus* 1025

R. SCOTT RUSSELL: Plant Root Systems. *P. B. Tinker* 1027

NUMBER 112

D. W. COWLING and M. J. KOZIOL: Growth of Ryegrass (*Lolium perenne* L.) exposed to SO_2. I 1029

M. J. KOZIOL and C. F. JORDAN: Changes in Carbohydrate Levels in Red Kidney Bean (*Phaseolus vulgaris* L.) exposed to Sulphur Dioxide 1037

A. PRIEBE, H. KLEIN, and H.-J. JAGER: Role of Polyamines in SO_2-polluted Pea Plants 1045

I. R. MACDONALD and D. C. GORDON: The Regulation of Root Growth in Cress Seedlings by Light and Gravity 1051

B. V. MILBORROW: The Stability of conjugated Abscisic Acid during Wilting 1059

A. R. SMITH and J. VAN STADEN: Changes in Endogenous Cytokinin Levels in Kernels of *Zea mays* L. during imbibition and Germination 1067

J. VAN STADEN and G. G. DIMALLA: Endogenous Cytokinins and the Breaking of Dormancy and Apical Dominance in Potato Tubers 1077

SUDHAKAR BHARTI, Y. D. SINGH, and M. M. LALORAYA: Paramagnetic Manganese and Associated Resonances in Isolated Cucumber (*Cucumis sativus* L. var. long Green) Cotyledons in Light and Dark 1085

SUDHAKAR BHARTI, Y. D. SINGH, and M. M. LALORAYA: Changes in Paramagnetic Manganese (Mn(II)) and Related Enzyme Activities in Isolated Cucumber Cotyledons During Growth. I 1091

RUTH VOLK, E. HAREL, A. M. MAYER, and ESTHER GAN-ZVI: Catechol Oxidase in Suspension Cultures of Apple Fruit—The Effects of Growth Regulators 1099

J. M. WIDHOLM: Selection and Characterization of a *Daucus carota* L. Cell Line Resistant to Four Amino Acid Analogues 1111

G. L. LEES, R. LAHUE, and J. E. THOMPSON: Changes in the Acetylcholine Titre of Senescing Cotyledons 1117

M. G. PITMAN and DALE WELFARE: Inhibition of Ion Transport in Excised Barley Roots by Abscisic Acid; Relation to Water Permeability of the Roots 1125

D. J. F. BOWLING and JAMES DUNLOP: Uptake of Phosphate by White Clover. I 1139

JAMES DUNLOP and D. J. F. BOWLING: Uptake of Phosphate by White Clover. II 1147

C. GILLET and J. LEFEBVRE: Ionic Diffusion Through the *Nitella* Cell Wall in the Presence of Calcium 1155

SUSAN M. THOMAS, NIGEL P. HALL, and MICHAEL J. MERRETT: Ribulose 1,5-Bisphosphate Carboxylase/Oxygenase Activity and Photrespiration during the Ageing of Flag Leaves of Wheat 1161

KLAUS WINTER: Short-Term Fixation of ^{14}Carbon by the Submerged Aquatic Angiosperm *Potamogeton pectinatus* 1169

C. R. CLEMENT, M. J. HOPPER, L. H. P. JONES, and E. L. LEAFE: The Uptake of Nitrate by *Lolium perenne* from Flowing Nutrient Solution. II 1173

M. GYENES, V. K. ANDRIANOV, A. A. BULYCHEV, and G. A. KURELLA: Light-Induced H^+ Accumulation in the Vacuole of *Nitellopsis obtusa* 1185

HANNO RICHTER: A Diagram for the Description of Water Relations in Plant Cells and Organs 1197

G. A. DRAKE, D. J. CARR, and W. P. ANDERSON: Plasmolysis, Plasmodesmata, and the Electrical Coupling of Oat Coleoptile Cells 1205

ALISON A. POWELL and S. MATTHEWS: The Damaging Effect of Water on Dry Pea Embryos during Imbibition 1215

D. J. BAGNALL and J. A. WOLFE: Chilling Sensitivity in Plants: Do the Activation Energies of Growth Processes Show an Abrupt Change at a Critical Temperature? 1231

MICHAEL F. WILSON and E. ARTHUR BELL: The Determination of the Changes in the Free Amino Acid Content of the Eluate from Germinating Seeds of *Glycine wightii* (L.) and its Effect on the Growth of Lettuce Fruits 1243

G. RUSSELL and J. GRACE: The Effect on Wind on Grasses. V 1249

FRED IDIEM' OPUTE: Palmae Lipids: Status in Chemotaxonomy 1259

A. M. VAZQUEZ and K. C. SHORT: Morphogenesis in Cultured Floral Parts of African Violet 1265

C. G. GREENHAM: A Wide-Range A.C. Bridge for Impedance and Injury Studies on Plant Tissues 1273

BOOK REVIEWS

D. GROSSER: Die Holzer Mitteleuropas. *D. J. B. White* 1283

D. O. HALL, J. COOMBS, and T. W. GOODWIN: Proceedings of the Fourth International Congress on Photosynthesis 77. *H. W. Woolhouse* 1283

H. E. STREET: Plant Tissue and Cell Culture. *G. Hussey* 1284

H. SMITH: The Molecular Biology of Plant Cells. *J. E. Dale* 1286

M. TEVINI and H. K. LICHTENTHALER: Lipids and Lipid Polymers in Higher Plants. *J. Friend* 1288

NUMBER 113

S. E. YANG and H. E. STREET: Studies on the Growth in Culture of Plant Cells XXIII 1291

S. J. DEWDNEY and J. A. MCWHA: The Metabolism and Transport of Abscisic Acid During Grain Fill in Wheat 1299

GORDON DRAKE and D. J. CARR: Plasmodesmata, Tropisms, and Auxin Transport 1309

TOR-HENNING IVERSEN and ANNETTE ROMMELHOFF: The Starch Statolith Hypothesis and the Interaction of Amyloplasts and Endoplasmic Reticulum in Root Geotropism 1319

BRIAN G. AUDLEY and H. MARTIN WILSON: Metabolism of 2-Chloroethylphosphonic Acid (Ethephon) in Suspension Cultures of *Hevea brasiliensis* 1329

D. VAUGHAN, B. G. ORD, and R. E. MALCOLM: Effect of Soil Organic Matter on Some Root Surface Enzymes of and Uptakes into Winter Wheat 1337

JON E. KEELEY: Malic Acid Accumulation in Roots in Response to Flooding: Evidence Contrary to its Role as an Alternative to Ethanol 1345

A. D. COURTNEY and J. A. WILKINSON: A Stepping Motor Auxanometer to Record Rhizome Elongation Continuously 1351

S. PIHAKASKI and K. PIHAKASKI: Myrosinase in Brassicaceae (Cruciferae). III 1363

JAMES G. RODDICK: Effect of α-Tomatine on the Integrity and Biochemical Activities of Isolated Plant Cell Organelles 1371

EWA MACHOWICZ and S. WIECKOWSKI: The Photochemical Activity of Chloroplasts and Subchloroplast Particles Isolated from Etiolated Bean Leaves Exposed to Continuous Light 1383

A. HEROLD: Starch Synthesis from Exogenous Sugars in Tobacco Leaf Discs 1391

G. R. ROBERTS and A. J. KEYS: The Mechanism of Photosynthesis in the Tea Plant (*Camellia sinensis* L.) 1403

W. J. LUCAS, M. T. TYREE, and A. PETROV: Characterization of Photosynthetic ^{14}Carbon Assimilation by *Potamogeton lucens* L. 1409

VEELA B. MEHTA and B. S. VAIDYA: Cellular and Extracellular Polysaccharides of the Blue-Green Alga *Nostoc* 1423

M. J. KOZIOL and D. W. COWLING: Growth of Ryegrass (*Lolium perenne* L.) Exposed to SO_2. II 1431

P. E. H. MINCHIN: Analysis of Tracer Profiles with Applications to Phloem Transport 1441

WAYNE S. MEYER, E. L. GREACEN, and A. M. ALSTON: Resistance to Water Flow in the Seminal Roots of Wheat 1451

J. A. PETTY: Fluid Flow through the Vessels of Birch Wood 1463

I. M. ABDEL SAMAD and R. S. PEARCE: Leaching of Ions, Organic Molecules, and Enzymes from Seeds of Peanut (*Arachis hypogea* L.) imbibing without Testas or with intact Testas 1471

BOOK REVIEWS

V. H. HEYWOOD, J. B. HARBORNE, and B. L. TURNER: The Biology and Chemistry of the Compositae. *T. Reynolds* 1479

D. F. CUTLER: Applied Plant Anatomy. *D. J. B. White* 1481

ROYAL SOCIETY: Agricultural Efficiency: Philosophical Transactions of the Royal Society, Series B, Vol. 281, No. 980. *C. Whittingham* 1481

Index to Volume 29

ACOCK, B. The Contribution of Leaves from Different Levels within a Tomato Crop to Canopy Net Photosynthesis: An Experimental Examination of Two Canopy Models 815
AIKMAN, D. P. Phloem Transport: The Surface Flow Hypothesis 387
AL-CHARCHAFCHI, FAWZIA, *see* PECKET, R. C.
ALSTON, A. M., *see* MEYER, WAYNE S.
ANDERSON, W. P., *see* DRAKE, G. A.
ANDRIANOV, V. K., *see* GYENES, M.
ATSATT, PETER R., *see* HEINEMAN, ROBERT T.
AUDLEY, BRIAN G. Metabolism of 2-Chloroethylphosphonic acid (Ethepon) in Suspension Cultures of *Hevea brasiliensis* 1329
BAGNALL, D. J. Chilling Sensitivity in Plants: Do the Activation Energies of Growth Processes Show an Abrupt Change at a Critical Temperature? 1231
BARLOW, PETER W., *see* PAYNE, PETER I.
BASIOUNY, FOUAD, M. The Influence of Growth Regulators on Sprouting of *Hydrilla* Tubers and Turions 663
BELL, E. ARTHUR. The Determination of the Changes in the Free Amino Acid Content of the Eluate from Germinating Seeds of *Glycine wightii* (L.) and its Effect on the Growth of Lettuce Fruits 1243
BENJAMIN, L. R. Root Development and Source-Sink Relations in Carot, *Daucus carota* L. 425
BENZIONI, A. Ion Imbalance in (*apsicum annum scarbrous diminutive*, a Wilty Mutant of Pepper. II 879
BERNIER, G., *see* PRYKE, J. A.
BEWLEY, J. DEREK, *see* KROCHKO, JOAN E.
BHARTI, SUDHAKAR. Paramagnetic Manganese and Associated Resonances in Isolated Cucumber (*Cucumis sativus* L. var. Long Green) Cotyledons in Light and Dark 1085
BHARTI, SUDHAKAR. Changes in Paramagnetic Manganese (Mn(II)) and Related Enzyme Activities in Isolated Cucumber Cotyledons During Growth. I 1091
BIRD, M. C., *see* PASSAM, H. C.
BIRECKA, HELEN, *see* CATALFAMO, JAMES L.
BONNER, WALTER D. JR., *see* MOORE, ANTHONY L.
BORSTLAP, A. C. Glycine and L-Alanine as Antagonists of Growth Inhibition by the Branched-Chain Amino Acids in *Spirodela polyrhiza* 709
BOULTER, D. *see* CARASCO, J. F.
BOWLING, D. J. F. The Relationship Between the Cell Electrical Potential Difference and Salt Uptake in the roots of *Helianthus annuus* 135
BOWLING, D. J. F. Uptake of Phosphate by White Clover. I 1139
BOWLING, D. J. F., *see* DUNLOP JAMES
BRIARTY, L. G. The Development of Root Nodule Xylem Transfer Cells in *Trifolium repens* 735
BRIERS, J. D. Speckle Fluctuations as a Screening Test in the Holographic Measurement of Plant Motion and Growth 395
BULYCHEV, A. A., *see* GYENES, M.
BUNCE, JAMES A. Effects of Shoot Environment on Apparent Root Resistance to Water Flow in Whole Soybean and Cotton Plants 595
CAMPBELL, D. JOAN, *see* JACKSON, MICHAEL B.
CARASCO, J. F. The Isolation and Characterization of the Major Polypeptides of the Seed Globulin of Cowpea (*Vigna unguiculata* L. Walp) and their Sequential Synthesis in Developing Seeds 309
CARR, D. J., *see* DRAKE, G. A.
CARR, D. J., *see* DRAKE, GORDON

CATALFAMO, JAMES L. Effect of Gibberellic Acid and Ethylene on Peroxidase in Pea Internodes 347
CHANDLER, MURIEL R. Some Observations on Infection of *Arachis hypogaea* L. by *Rhizobium* 749
CHANDRA, N., *see* PAREEK, L. K.
CHARLES-EDWARDS, D. A., *see* ACOCK, B.
CHRIST, R. A. The Elongation Rate of Wheat Leaves. I 603
CHRIST, R. A. The Elongation Rate of Wheat Leaves. II 611
CLEMENS, J. Modification of Drought Resistance by Water Stress Conditioning in *Acacia* and *Eucalyptus* 895
CLEMENT, C. R. The Uptake of Nitrate by *Lolium perenne* from Flowing Nutrient Solution. I 453
CLEMENT, C. R. The Uptake of Nitrate by *Lolium perenne* from Flowing Nutrient Solution. II 1173
CLEMENT, C. R., *see* WOODHOUSE, P. J.
COUGHLAN, SEAN. Isolation and Characterization of Golgi Bodies from Vegetative Tissue of the Brown Alga *Fucus serratus* 55
COURTNEY, A. D. A Stepping Motor Auxanometer to Record Rhizome Elongation Continuously 1351
COWLES, JOE R., *see* PAAU, ALAN S.
COWLING, D. W. The Effect of SO_2 on *Lolium perenne* L. Grown at Different Levels of Sulphur and Nitrogen Nutrition 257
COWLING, D. W. Growth of Ryegrass (*Lolium perenne* L.) exposed to SO_2. I 1029
COWLING, D. W., *see* KOZIOL, M. J.
CROY, R., *see* CARASCO, J. F.
DAS, V. S. R., *see* RAGHAVENDRA, A. S.
DAVIES, W. J. Some Effects of Abscisic Acid and Water Stress on Stomata of *Vicia faba* L. 175
DELANEY, M. E. Effect of 1,1,1-Trichloro-2,2-bis(*p*-chlorophenyl)ethane on Cytochromes of the Photosynthetic Electron Transport System 25
DELL, B. Biosynthesis of Resin Terpenes in Leaves and Glandular Hairs of *Newcastella viscida* 89
DERBYSHIRE, E., *see* CARASCO, J. F.
DEWDNEY. S. J. The Metabolism and Transport of Abscisic Acid during Grain Fill in Wheat 1299
DIMALLA, G. G., *see* VAN STADEN, J.
DOBRZANSKA, MARTA, *see* PAYNE, PETER I.
DONAIRE, J. P. Lipid Biosynthesis in Leaf and Fruit of Olive 49
DRAKE, G. A. Plasmolysis, Plasmodesmeta, and the Electrical Coupling of Oat Coleoptile Cells 1205
DRAKE, GORDON. Plasmodesmeta, Tropisms, and Auxin Transport 1309
DREW, M. C. Nutrient Supply and the Growth of the Seminal Root System in Barley. III 435
DUNLOP, JAMES. Uptake of Phosphate by White Clover. II 1147
DUNLOP, JAMES., *see* BOWLING, D. J. F.
EDWARDS, MARY. Stomatal Responses to Humidity and Water Potentials of Epidermal and Mesophyll Tissue 771
EHWALD, R., *see* GRUNWALDT, D.
EREZ, AMNON. Thiourea, a Growth Promoter of Callus Tissues 159
EVANS, LEONARD V., *see* COUGHLAN, SEAN
FALKENFLUG, V., *see* MORESHET, S.
FEINBERG, JOSEPH H., *see* CATALFAMO, JAMES L.
FIELDING, J. L. A Biochemical and Cytochemical Study of Peroxidase Activity in Roots of *Pisum sativum*. I 969
FIELDING, J. L. A Biochemical and Cytochemical Study of Peroxidase Activity in Roots of *Pisum sativum*. II 983
FITTER, D. J., *see* ACOCK, B.
FOCK, H., *see* LAWLOR, D. W.
FOROUGHI-WEHR, BÄRBEL, *see* WILSON, HERBERT MARTIN
GALES, K., *see* JACKSON, MICHAEL B.

GALLACHER, A. E. The Effect of Different Water Regimes on Growth and Nodule Development of Greenhouse-Grown *Vicia Faba* 413
GAN-ZVI, ESTHER, *see* VOLK, RUTH
GARRARD, L. A., *see* BASIOUNY, FOUAD M.
GELMOND, HAYA. The Effect of Accelerated Aging of Sorghum Seeds on Seedling Vigour 489
GELMOND, HAYA, *see* PERL, M.
GILLET, C. Ionic Diffusion Through the *Nitella* Cell Wall in the Presence of Calcium 1155
GORDON, D. C., *see* MACDONALD, I. R.
GORDON, MARGARET E., *see* PAYNE, PETER I.
GÖRING, H., *see* GRUNWALDT, G.
GRACE, J., *see* RUSSELL, G.
GRAHAM, ROBIN D., *see* BOWLING, D. J. F.
GREACEN, E. L., *see* MEYER, WAYNE S.
GREENHAM, C. G. A Wide-Range A. C. Bridge for Impedance and Injury Studies on Plant Tissues 1273
GREENHAM, C. G. Influence of Virus Infections on Impedence Parameters 867
GREENWAY, H. Phosphoenolpyruvate Carboxylase During Development of Crassulacean Acid Metabolism and During a Diurnal Cycle in *Mesembryanthemum crystallinum* 547
GREENWAY, H., *see* WINTER, K.
GREENWOOD, A. D., *see* MUELLER, W. C.
GREYSON, R. I., *see* RAMAN, K.
GRUNWALDT, G. Suitability of the Osmotic Shock Procedure for the Analysis of Membrane Transport in Root Tips of *Zea mays* L. 97
GYENES, M. Light-Induced H^+ Accumulation in the Vacuole of *Nitellopsis obtusa* 1185
HAGASETH, G. T. Kinetic and Thermodynamic Parameters that Describe Isothermal Seed Germination 281
HALL, J. H., *see* FIELDING, J. L.
HALL, M. A., *see* SIVAKUMARAN, S.
HALL, NIGEL P. Ribulose-1, 5-Diphosphate Carboxylase Protein during Flag Leaf Senescence 31
HALL, NIGEL, *see* THOMAS, SUSAN
HALLER, W., *see* BASIOUNY, FOUAD, M.
HAND, D. W., *see* ACOCK, B.
HAREL, E., *see* VOLK, RUTH
HARRIS, G. C. Stoichiometry of the Ribulose-1,5-Bisphosphate Oxygenase Reaction 561
HAWKER, J. S., *see* MARES, D. J.
HEINEMAN, ROBERT T. Nutritional Studies of Hemiparasitic *Orthocarpus* (Scrophulariaceae) 789
HELMS, KATIE, *see* GREENHAM, C. G.
HENSON, I. E. Types, Formation, and Metabolism of Cytokinins in Leaves of *Alnus glutinosa* (L.) Gaertn. 935
HEROLD, A. Starch Synthesis from Exogenous Sugars in Tobacco Leaf Discs 1391
HERRIDGE, DAVID F., *see* PATE, JOHN S.
HILL, J. M., *see* SHEWRY, P. R.
HILLMAN, J. R., *see* MCDOUGALL, J.
HOPPER, M. J., *see* CLEMENT, C. R.
HORNER, M. Problems Encountered in the Culture of Isolated Pollen of a Burley Cultivar of *Nicotiana tabacum* 217
HUTBER, GEORGINA N. The Metabolic Fate of Phenoxyacetic Acids in Higher Plants 619
INBAR, M., *see* LESHEM, Y. Y.
ITAI, CHANAN. Functional Epidermal Cells are Necessary for Abscisic Acid Effects on Guard Cells 765
IVERSEN, TOR-HENNING. The Starch Statolith Hypothesis and the Interaction of Amyloplasts and Endoplasmic Reticulum in Root Geotropism 1319
JACKSON, MICHAEL B. Effect of Waterlogged Soil Conditions on the Production of Ethylene and on Water Relationships in Tomato Plants 183
JÄGER, H.-J., *see* PRIEBE, A.
JAYASURIYA, H. D., *see* SMITH, F. A.

JONES, L. H. P., *see* CLEMENT, C. R.
JONES, M., *see* DELANEY, M. E.
JONES, P. G., *see* CLEMENS, J.
JORDAN, C F., *see* KOZIOL, M. J.
KEELEY, JON E. Malic Acid Accumulation in Roots in Response to Flooding: Evidence Contrary to its Role as an Alternative to Ethanol 1345
KEYS, A. J., *see* ROBERTS, G. R.
KEYS, ALFRED, J., *see* HALL, NIGEL P.
KLEIN, H., *see* PRIEBE, A.
KOVOOR, A., *see* RADOJEVIC, LJ.
KOZIOL, M. J. Charges in Carbohydrate Levels in Red Kidney Bean (*Phaseolus vulgaris* L.) exposed to Sulphur Dioxide 1037
KOZIOL, M. J. Growth of Ryegrass (*Lolium perenne* L.) Exposed to SO_2. II 1431
KOZIOL, M. J., *see* COWLING, D. W.
KRAMER, D., *see* STELZER, R.
KROCHKO, JOAN E. The Effects of Rapid and Very Slow Speeds of Drying on the Ultrastructure and Metabolism of the Desiccation-Sensitive Moss *Cratoneuron filicinum* (Hedw.) Spruce 905
KUBEK, D. J., Electronic Measurement of Plant Cell Number and Size in Suspension Culture 511
KURELLA, G. A. *see* GYENES, M.
LAHUE, R., *see* LEES, G. L.
LALORAYA, M. M., *see* BHARTI, SUDHAKAR
LAUCHLI, A., *see* STELZER, R.
LAWLOR, D. W. Photosynthesis, Respiration, and Carbon Assimilation in Water-Stressed Maize at Two Oxygen Concentrations 579
LEAFE, E. L., *see* CLEMENS, C. R.
LEE, R. B. Inorganic Nitrogen Metabolism in Barley Roots Under Poorly Aerated Conditions 693
LEES, G. L. Changes in the Acetylcholine Titre of Senescing Cotyledons 1117
LEFEBVRE, J., *see* GILLET, C.
LEGGATT, M. M., *see* SHEWRY, P. R.
LESHEM, Y. Y. Resistance to Gibberellin-Induced Changes of Lipid Fluidity in Wheat Embryo Mitochondrial Membranes as Assessed by the Fluorescent Probe 1,6-Diphenyl-1,3,5-hexatriene 671
LOCKYER, D. R., *see* COWLING, D. W.
LONG, S. P. The Responses of Net Photosynthesis to Vapour Pressure Deficit and CO_2 Concentration in *Spartina townsendii* (*sensu lato*), a C_4 Species from a Cool Temperate Climate 567
LONG, S. P. The Responses of Net Photosynthesis to Light and Temperature in *Spartina townsendii* (*sensu lato*), a C_4 Species from a Cool Temperate Climate 803
LÓPEZ-GORGÉ, J., *see* DONAIRE, J. P.
LORD, EUNICE I., *see* HUTBER, GEORGINA, N.
LORD, J. M. Evidence that a Proliferation of the Endoplasmic Reticulum Precedes the Formation of Glyoxysomes and Mitochondria in Germinating Castor Bean Endosperm 13
LÖSCH, RAINER. Humidity Responses of Stomata and the Potassium Content of Guard Cells 781
LOUGHMAN, BRIAN C., *see* HUTBER, GEORGINA N.
LUCAS, W. J. Characterization of Photosynthetic ^{14}Carbon Assimulation by *Potamogeton lucens* L. 1409
LUDWIG, L. J., *see* ACOCK, B.
LURIA, I., *see* GELMOND, HAYA
LURIA, I., *see* PERL, M.
LÜTTGE, U., *see* GREENWAY, H.
MACDONALD, I. R. The Regulation of Root Growth in Cress Seedlings by Light and Gravity 1051
MACHOWICZ, EWA. The Photochemical Activity of Chloroplasts and Subchloroplast Particles Isolated from Etiolated Bean Leaves Exposed to Continuous Light 1383

MALCOLM, R. E., *see* VAUGHAN, D.
MARBACH, IRITH. Formation of Catechol Oxidase in Seed Coats of *Pisum elatius* during Seed Maturation 69
MARC, J. Determination of the Length of the Vegetative and Pre-floral Stages in the Day-Neutral Plant *Helianthus annuus* by Chilling Pulses 367
MARES, D. J. Starch Synthesizing Enzymes in Chloroplasts of Developing Leaves of Spinach (*Spinacea oleracea* L.) 829
MARRON, PHILIP, *see* WILSON, GRAHAM
MATTHEWS, S., *see* POWELL, ALISON A.
MAVROMMATIS, MARIA, *see* SPYROPOULOS, CAROLINE G.
MAYER, A. M. *see* VOLK, RUTH
MAYER, ALFRED M., *see* MARBACH, IRITH
MCCOMB, A. J., *see* DELL, B.
MCDOUGALL, J. Purification of IAA from Shoot Tissue of *Phaseolus vulgaris* and its Analysis by GC-MS 375
MCWHA, J. A., *see* DEWDNEY, S. J.
MEHTA, USHA, *see* MOHAN RAM, H. Y.
MEHTA, VEELA B. Cellular and Extracellular Polysaccharides of the Blue-Green Alga *Nostoc* 1423
MEIDNER, HANS, *see* EDWARDS, MARY
MEIDNER, HANS, *see* ITAI, CHANAN
MERRETT, MICHAEL J., *see* HALL, NIGEL P.
MERRETT, MICHAEL J., *see* THOMAS, SUSAN
MEYER, WAYNE S. Resistance to Water Flow in the Seminal Roots of Wheat 1451
MIFLIN, B. J. *see* SHEWRY, P. R.
MILBORROW, B. V. The Stability of Conjugated Abscisic Acid during Wilting 1059
MINCHIN, P. E. H. Analysis of Tracer Profiles with Applications to Phloem Transport 1441
MINCHIN, PETER E. H., *see* PICKARD, WILLIAM F.
MIX, GUNDA, *see* WILSON, HERBERT MARTIN
MOHAN RAM, H. Y. Origin and Development of Secondary Capitula in *Calendula officinalis* L. in Response to Gibberellic Acid 653
MOORE, ANTHONY L. Factors Influencing the Components of the Total Protonmotive Force in Mung Bean Mitochrondria 1
MORESHET, S. A Krypton Diffusion Porometer for the Direct Field Measurement of Stomatal Resistance 267
MORRIS, D. A. A Microautoradiographic Study of Auxin Transport in the Stem of Intact Pea Seedlings (*Pisum sativum* L.) 147
MUELLER, W. C. The Ultrastructure of Phenolic-Storing Cells Fixed with Caffeine 757
MÜLLER, W. J., *see* GREENHAM, C. G.
NEWBURY, H. J. Nucleic Acid Metabolism during Early Development of Pollinated and Auxin-Induced Parthenocarpic Watermelon Fruits 207
OPUTE, FRED IDIEM'. Palmae Lipids: Status in Chemotaxonomy 1259
ORD, B. G., *see* VAUGHAN, D.
ORO, JAMES, *see* PAAU, ALAN S.
PAAU, ALAN S. Application of Flow Microfluorometry to the Study of Algal Cells and Isolated Chloroplasts 1011
PACEY, JOHN, *see* KROCHKO, JOAN E.
PALMER, J. H. *see* MARC, J.
PAREEIC, L. K. Differentiation of Shoot Buds *in vitro* in Tissue Cultures of *Sisymbrium irio* L. 239
PASSAM, H. C. The Respiratory Activity of Honeydew Melons During the Climacteric 325
PATE, JOHN S. Partitioning and Utilization of Net Photosynthate in a Nodulated Annual Legume 401
PATRICK, J. W. Auxin-Promoted Transport of Metabolites in Stems of *Phaseolus vulgaris* L. Effects Remote from the Site of Hormone Application 359
PAYNE, PETER I. The Synthesis of RNA in Imbibing Seed of Rape (*Brassica napus*) prior to the Onset of Germination: A Biochemical and Cytological Study 73

PEARCE, R. S., *see* SAMAD, I. M. ABDEL
PECKET, R. C. Dormancy in Light-Sensitive Lettuce Seeds 167
PERBAL, GERALD The Mechanism of Geoperception in Lentil Roots 631
PERL, M. Biochemical Changes in Sorghum Seeds Affected by Accelerated Aging 497
PERL, M., *see* GELMOND, HAYA
PETROV, A., *see* LUCAS, W. J.
PETTY, J. A. Fluid Flow through the Vessels of Birch Wood 1463
PICKARD, WILLIAM F. Real Time Studies of Carbon-11 Translocation in Moonflower. I 993
PICKARD, WILLIAM F. Real Time Studies of Carbon-11 Translocation in Moonflower. II 1003
PIHAKASKI, K. *see* PIHAKASKI S.
PIHAKASKI, KAARINA. Myrosinase in Brassicaceae (Cruciferae). II 335
PIHAKASKI, S. Myosinase in Brassicaceae (Cruciferae). III 1363
PIHAKASKI, SEPPO, *see* PIHAKASKI, KAARINA
PITMAN, M. G. Inhibition of Ion Transport in Excised Barley Roots by Abscisic Acid; Relation to Water Permeability of the Roots 1125
POMBER, L., *see* WEINBERGER, PEARL
POSSINGHAM, J. V., *see* MARES, D. J.
POSSINGHAM, J. V., *see* NEWBURY, H. J.
POWELL, ALISON A. The Damaging Effect of Water on Dry Pea Embryos during Imbibition 1215
PRASAD, R., *see* WEINBERGER, PEARL
PRATT, H. M., *see* SHEWRY, P. R.
PRIEBE, A. Role of Polyamines in SO_2-Polluted Pea Plants 1045
PRYKE, J. A. RNA Synthesis in the Apex of *Sinapis alba* in Transition to Flowering 953
RADLEY, MARGARET. Factors Affecting Grain Enlargement in Wheat 919
RADOJEVIC, LJ. Characterization and Estimation of Newly Synthesized DNA in Higher Plant Protoplasts During the Initial Period of Culture 963
RAGHAVENDRA, A. S. (Na^+–K^+)-Stimulated ATPase in Leaves of C_4 Plants: Possible Involvement in Active Transport of C_4 Acids 39
RAMAN, K. Differential Effects of Kinetin on Acidic Ethyl Acetate-soluble and Highly Water-soluble Gibberellin Fractions in 'Single' and 'Double' *Nigella damascena* L. 141
RAVEN, J. A. Effect of Temperature and External pH on the Cytoplasmic pH of *Chara corallina* 853
RAVEN, J. A., *see* SMITH, F. A.
RICH, PETER, R., *see* MOORE, ANTHONY L.
RICHTER, HANNO, Water Relations of Single Drying Leaves: Evaluation with a Dewpoint Hygrometer 277
RICHTER, HANNO. A Diagram for the Description of Water Relations in Plant Cells and Organs 1197
ROBERTS, G. R. The Mechanism of Photosynthesis in the Tea Plant (*Camellia sinensis* L.) 1403
ROBERTS, JOHN. The Use of the 'Tree Cutting' Technique in the Study of the Water Relations of Norway Spruce, *Picea alba* (L.) Karst. 465
RODDICK, JAMES G. Effect of α-Tomatine on the Integrity and Biochemical Activities of Isolated Plant Cell Organelles 1371
ROGERS, L. J., *see* DELANEY, M. E.
ROMMELHOFF, ANNETTE, *see* IVERSEN, TOR-HENNING
RUSSELL, G. The Effect of Wind on Grasses. IV 245
RUSSELL, G. The Effect of Wind on Grasses. V 1249
SAKER, L. R., *see* DREW, M. C.
SAMAD, I. M. ABDEL. Leaching of Ions, Organic Molecules, and Enzymes from Seeds of Peanut (*Arachis hypogea* L.) Imbibing Without Testas or with Intact Testas 1471
SCHENK, BIRGIT, *see* LÖSCH, RAINER
SEDGLEY, MARGARET, *see* NEWBURY, H. J.
SHEWRY, P. R. An Evaluation of Techniques for the Extraction of Hordein and Glutelin from Barley Seed and a Comparison of the Protein Composition of Bomi and Risø 1508 677
SHORT, K. C., *see* VAZQUEZ, A. M.
SHULER, M. L., *see* KUBEK, D. J.

SINGH, Y. D., *see* BHARTI, SUDHAKAR
SIVAKUMARAN, S. Effects of Age and Water Stress on Endogenous Levels of Plant Growth Regulators in *Euphorbia lathyrus* L. 195
SMITH, A. R. Changes in Endogenous Cytokinin Levels in Kernels of *Zea mays* L. during Imbibition and Germination 1067
SMITH, F. A. Entry of Methylammonium and Ammonium Ions into *Chara* Internode Cells 107
SMITH, F. A. Uptake of Methyulammonium Ions by *Hydrodictyon africanum* 121
SMITH, F. A., *see* RAVEN, J. A.
SMITH, GEORGE W., *see* CATALFAMO, JAMES L.
SPRENT, J. I., *see* GALLACHER, A. E.
SPYROPOULOS, CAROLINE G. Effect of Water Stress on Pigment Formation in *Quercus* Species 473
STELZER, R. An Improved Precipitation Technique for Intracellular Cl^- Localization in Plant Tissues by Use of Picric Acid 729
STERN, A. I., *see* HARRIS, G. C.
STREET, H. E., *see* HORNER, M.
STREET, H. E., *see* YANG, S. E.
TAL, M., *see* BENZIONI, A.
THOMAS, A. G., *see* MORRIS, D. A.
THOMAS, SUSAN. Ribulose-1,5-Bisphosphate Carboxylase/Oxygenase Activity and Photorespiration during the Aging of Flag Leaves of Wheat 1161
THOMPSON, J. E., *see* LEES, G. L.
TRACHTENBERG, S. Conduction of Ionic Solutes and Assimilates in the Leptom of *Polytrichum juniperinum* Willd 719
TROUGHTON, JOHN H., *see* PICKARD, WILLIAM F.
TYREE, M. T., *see* LUCAS, W. J.
VAIDYA, B. S., *see* MEHTA, VEELA B.
VAN ANDEL, O. M. Stimulation and Inhibition by Ethepon of Stem and Leaf Growth of Some Gramineae at Different Stages of Development 639
VAN BEL, A. J. E. The Free Space of the Xylem Translocation Pathway of the Tomato Stem 295
VAN STADEN, J. Endogenous Cytokinins and the Breaking of Dormancy and Apical Dominance in Potato Tubers 1077
VAN STADEN, J., *see* SMITH, A. R.
VAUGHAN, D. Effect of Soil Organic Matter on Some Root Surface Enzymes of and Uptakes into Winter Wheat 1337
VAZQUEX, A. M. Morphogenesis in Cultured Floral Parts of African Violet 1265
VERKERKE, D. R., *see* VAN ANDEL, O. M.
VOLK, RUTH. Catechol Oxidase in Suspension Cultures of Apple Fruit—The Effects of Growth Regulators 1099
WAINWRIGHT, S. J. Inhibititon by Zinc of Cell Wall Acid Phosphatases from Roots in Zinc-Tolerant and Non-Tolerant Clones of *Agrostis tenuis* Sibth. 525
WALKER, N. A., *see* SMITH, F. A.
WAREING, P. F., *see* PATRICK, J. W.
WARREN WILSON, J., *see* ACOCK, B.
WEINBERGER, PEARL. The Responses of White Spruce and Yellow Birch to Some Selected Organophosphorus Insecticides and the Adjuvants Atlox and Arotex 479
WELLFARE, DALE, *see* PITMAN, M. G.
WIDHOLM, J. M. Selection and Characterization of a *Daucus carota* L. Cell Line Resistant to Four Amino Acid Analogues 1111
WIECKOWSKI, S., *see* MACHOWICZ, EWA
WILD, A., *see* WOODHOUSE, P. J.
WILDON, D. C., *see* AIKMAN, D. P.
WILKINSON, J. A., *see* COURTNEY, A. D.
WILSON, GRAHAM. Growth and Anthraquinone Biosynthesis by *Galcium mollugo* L. Cells in Batch and Chemostat Culture 837
WILSON, H. MARTIN, *see* AUDLEY, BRIAN G.

WILSON, HERBERT MARTIN Early Microspore Divisions and Subsequent Formation of Microspore Calluses at High Frequency in Anthers of *Hordeum vulgare* L. 227
WILSON, MICHAEL F., *see* BELL, E. ARTHUR
WINTER, K. Phosphoenolpyruvate Carboxylase from *Mesembryanthemum crystallinum*: Its Isolation and Inactivation *in vitro* 539
WINTER, K., *see* GREENWAY, H.
WINTER, KLAUS. Short-Term Fixation of ^{14}Carbon by the Submerged Aquatic Angiosperm *Potamogeton pectinatus* 1169
WITHERS, A. C., *see* ACOCK, B.
WOLFE, J. A., *see* BAGNALL, D. J.
WOODHOUSE, P. J. Rate of Uptake of Potassium by Three Crop Species in Relation to Growth 885
WOODSTOCK, L. W., *see* GELMOND, HAYA
WOOLHOUSE, H. W., *see* LONG, S. P.
WOOLHOUSE, H. W., *see* WAINWRIGHT, S. J.
WREN, M. J., *see* BENJAMIN, L. R.
YANG, S. E. Studies on the Growth in Culture of Plant Cells. XXIII 1291
ZAMSKI, E., *see* TRACHTENBERG, S.